

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A thin-film magnetic head comprising:
an antiferromagnetic layer;
a pinned layer whose direction of magnetization is fixed by exchange-coupling with said antiferromagnetic layer;
a free layer whose direction of magnetization varies according to external magnetic field;
an intermediate layer disposed between said pinned layer and said free layer;
and
a pair of electrode layers for supplying a sense current to the free layer in a layer thickness direction of said free layer,
~~one of said a first electrode layers layer of the pair of electrode layers~~ being connected to said pinned ~~layer-layer~~ and a second electrode layer of the pair of electrode layers being placed above the free layer on a side opposite the pinned layer.
2. (Currently Amended) A thin-film magnetic head according to claim 1, wherein said pinned layer comprises a first ferromagnetic layer in contact with said antiferromagnetic layer, a second ferromagnetic layer whose direction of magnetization is opposite to that of said first ferromagnetic layer, and a nonmagnetic spacer layer disposed between said first and second ferromagnetic layers;
said ~~one first~~ electrode layer connected to said pinned layer being in contact with a track-width side face of said second ferromagnetic layer but not in contact with a track-width side face of said first ferromagnetic layer.

3. (Original) A thin-film magnetic head according to claim 2, wherein a face of said second ferromagnetic layer opposing said first ferromagnetic layer has an area smaller than that of a face of said first ferromagnetic layer opposing said second ferromagnetic layer.

4. (Withdrawn-Currently Amended) A thin-film magnetic head according to claim 1, wherein said pinned layer, said intermediate layer, and said free layer are disposed between a substrate and said antiferromagnetic layer, and

the ~~other~~ second electrode layer of said pair of electrode layers that is not connected to the pinned layer is disposed ~~between said free layer and said substrate~~ above and in contact with the first electrode layer, and

the antiferromagnetic layer, the pinned layer and the free layer are disposed between the second electrode layer and a third electrode layer.

5. (Original) A thin-film magnetic head according to claim 1, wherein said intermediate layer is formed from an electrically conductive material.

6. (Currently Amended) A head gimbal assembly having a thin-film magnetic head mounted with a gimbal;

said thin-film magnetic head comprising:

an antiferromagnetic layer;

a pinned layer whose direction of magnetization is fixed by exchange-coupling with said antiferromagnetic layer;

a free layer whose direction of magnetization varies according to external magnetic field;

an intermediate layer disposed between said pinned layer and said free layer;

and

a pair of electrode layers for supplying a sense current in a layer thickness direction of said free layer,

~~one of said a first electrode layers~~ layer of the pair of electrode layers being connected to said pinned ~~layer~~ layer and a second electrode layer of the pair of electrode layers being placed above the free layer on a side opposite the pinned layer.

7. (Currently Amended) A hard disk apparatus comprising a hard disk adapted to write magnetic information therein, and a thin-film magnetic head for reading said magnetic information on said hard disk;

said thin-film magnetic head comprising:

an antiferromagnetic layer;

a pinned layer whose direction of magnetization is fixed by exchange-coupling with said antiferromagnetic layer;

a free layer whose direction of magnetization varies according to external magnetic field;

an intermediate layer disposed between said pinned layer and said free layer;

and

a pair of electrode layers for supplying a sense current in a layer thickness direction of said free layer,

~~one of said a first electrode layers~~ layer of the pair of electrode layers being connected to said pinned ~~layer~~ layer and a second electrode layer of the pair of electrode layers being placed above the free layer on a side opposite the pinned layer.

8. (Withdrawn-Currently Amended) A method of making a thin-film magnetic head, said method comprising the steps of:

forming an antiferromagnetic layer;

forming a pinned layer whose direction of magnetization is fixed by exchange-coupling with said antiferromagnetic layer;

forming a free layer whose direction of magnetization varies according to external magnetic field;

forming an intermediate layer disposed between said pinned layer and said free layer; and

forming a pair of electrode layers for supplying a sense current to said free layer in a layer thickness direction of said free layer,

~~one of said a~~ first electrode layer of the pair of electrode layers being formed so as to be connected to said pinned ~~layer~~ layer and a second electrode layer of the pair of electrode layers being formed so as to be placed above the free layer on a side opposite the pinned layer.

9. (Withdrawn-Currently Amended) A method of making a thin-film magnetic head according to claim 8, wherein said pinned layer comprises a first ferromagnetic layer in contact with said antiferromagnetic layer, a second ferromagnetic layer whose direction of magnetization is opposite to that of said first ferromagnetic layer, and a nonmagnetic spacer layer disposed between said first and second ferromagnetic layers,

said ~~one~~ first electrode layer connected to said pinned layer being formed in contact with a track-width side face of said second ferromagnetic layer but not in contact with a track-width side face of said first ferromagnetic layer.

10. (Withdrawn) A method of making a thin-film magnetic head according to claim 8, wherein said pinned layer comprises a first ferromagnetic layer in contact with said antiferromagnetic layer, a second ferromagnetic layer whose direction of magnetization is opposite to that of said first ferromagnetic layer, and a nonmagnetic spacer layer disposed between said first and second ferromagnetic layers;

said method comprising the steps of:

obtaining said first ferromagnetic layer;

forming a magnetic layer to become said second ferromagnetic layer so as to cover said first ferromagnetic layer; and

patterning said magnetic layer by utilizing a mask so as to obtain said second ferromagnetic layer having a desirable form;

wherein a projected area of said mask onto said first ferromagnetic layer is smaller than the area of a face of said first ferromagnetic layer opposing said mask.